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Mrs. Graf

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Engineering

S. H. McCrory, Chief

MONTHLY NEWS LETTER

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No. 9

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: Notice has just been received of the loss of :
: General Accounting Office Credential Card No. 121 :
: and Transportation Identification Card No. 47, issued: :
: to John K. Willis, an investigator of that office. :
: Under no circumstances should these cards be recog- :
: nized. Mr. Willis has been issued a new Credential :
: Card No. 132 and an Identification Card No. 94. :
:

The advisory council for the College Division of the A.S.A.E. held its annual meeting in Washington March 9, 10, and 11. The meeting was attended by Prof. Charles E. Seitz, Virginia, Chairman; Prof. Gross, New Jersey; and Prof. McCuen, Ohio. Two members, Brackett of Nebraska and Carter of Arkansas were unable to attend. The meeting was participated in by Mr. McCrory and several others of the Bureau staff.

As the "News Letter" is issued the Agricultural appropriation bill is in conference, it having been passed by the Senate in a form somewhat different than as passed by the House.

S. P. Lyle left Washington March 20 for a field trip during which he will have conferences relative to extension work at Michigan State College, the University of Wisconsin and Purdue University. He will return to Washington about April 4.

O. M. Page has been temporarily transferred from the land appraisal work on the Lower Mississippi River in order to do similar work for the War Department in Northern Illinois in connection with the Illinois water way.

Chas. A. Bennett was invited to address the West Tennessee Cotton Ginners Association at Jackson, Tenn. on March 16. While enroute the Memphis, Tenn. Cotton Exchange invited him to display a miniature model of the Vertical Cotton Drier and to describe to them the operation of the drier.

L. A. Jones recently visited W. D. Ellison at Dover, Delaware, to view a new method of cleaning drainage ditches developed by Mr. Ellison. A track laying type tractor, equipped with a double drum winch, is placed along one side of the ditch and a deadman on the other side. A drag line bucket attached to a cable is drawn toward the tractor and at the same time an empty bucket is drawn across the ditch to the deadman. This machine has been used on ditches having a width of 4 to 6 feet on the bottom and gives indications of being a very satisfactory method where large stumps or rocks are not encountered.

T.E. Staebner has gone to Belle Glade, Fla., to inaugurate a series of ground water studies in cooperation with the Florida Everglades experiment station.

C.E. Ranser accompanied G. M. Reed, field representative of the Aetna Life Insurance Company, on a trip to inspect a 200-acre farm terraced by this Company in Logan County, Okla. This Company has taken over several hundred farms in Oklahoma and is endeavoring to maintain their fertility by terracing. Last year about 3,500 acres of land were terraced. Two terracing outfits are operated continuously when weather and crops permit. Each outfit consists of two 30-horsepower Caterpillar tractors and a 10-foot blade Shawnee grader and a rotary fresno. The Caterpillar tractors are operated in tandem when building terraces.

H. S. Riesbol reports that 1.95 and 4.57 tons of soil per acre, respectively, were carried away from virgin and badly eroded land similarly terraced, and 12.59 and 23.94 per cent of the rainfall. This indicates that virgin land erodes slower and is a greater conservator of the rainfall than is badly eroded land. These results also show that a closer spacing of terraces would be required on eroded land than on comparable virgin land. The effectiveness of terraces in controlling erosion on the Guthrie project is demonstrated by measurements of soil losses on comparable unterraced and terraced cultivated areas. A loss of 43.9 tons of soil per acre occurred during the year 1931 from an unterraced area planted to a cover crop of rye and followed by cowpeas and later by winter wheat, as compared with 1.25 tons of soil per acre from a level-terraced area planted to oats and followed by cowpeas and later by winter wheat, 35 times as much soil being eroded from the unterraced as from the terraced area.

R. W. Baird reports that the soil losses for the year 1931 for terraces with spacings of 3, 4 and 5 feet on a terrace 1,700 feet long having 7 per cent slope were 2.7, 4.7 and 5.3 tons per acre and the water losses were 8.1, 9.4 and 13.2 per cent respectively. Comparing these losses with those for 700-foot terraces with similar spacings it was found that the greater soil losses per acre of drainage area occurred for the longer terraces. It is believed that this is due to the fact that the greater volume of water in the terrace channels of the longer terraces causes more erosion and the transportation of more of the soil that has moved down the land slope into the terrace channel.

R. R. Drake reports that wheat grown on land subsoiled to conserve moisture yielded 30.9 bushels per acre and on the unsubsoiled plot 29.1 bushels per acre for the year 1930. However, for the year 1931 the yields were 30.6 and 30.8 bushels per acre for the subsoiled and the unsubsoiled plots respectively.

H. O. Hill reports that level terraces with open ends or terraces with a fall of 1 inch per 100 feet perform quite satisfactorily on the Temple project. However it appears from observations that it might be advisable to give all terraces a slight fall in order to afford better drainage and to reduce possible damage to crops in the terrace channels.

Results on the Bethany project as reported by A. T. Holman show that a level terrace with one end open is distinctively more effective in checking erosion than a comparable terrace with a grade of 6 inches in 100 feet. Thirteen principal rains amounting to 13.89 inches during 1931 caused a loss of soil of 1.00 ton per acre from the level terraced area as compared with 2.72 tons per acre from the graded terrace, although the run-off from the graded terrace was 27 per cent greater than from the level terrace channel.

Observations made by P. C. McGrew on the Pullman soil erosion project during the recent periods of run-off due to melting snow indicate that there is very little difference in erosion on land where the following practices were followed: subsoiling 16 inches deep; waffle cultivation before and after drilling; and drilling in the customary manner. Alternate freezing and thawing of the surface soil with several inches of frozen soil beneath caused the surface soil to run and partially fill the waffle holes. Hardly a single hole could be found that held all of the water coming from its limited drainage area.

H. E. Bergschneider has recently completed a survey and map of 120 acres of badly eroded land east of the Guthrie farm leased by the Oklahoma A. & M. College for experiments on the control of erosion on pastured land.

W. W. McLaughlin is in the Washington office to confer with Mr. McCrory relative to the work of the Irrigation Division. On his return to Berkeley he will inspect the work in progress in Texas, New Mexico, and Arizona.

L. T. Jessup is in Washington attending a conference between this Bureau and the Geological Survey relative to a continuance of the Kootenai River investigation.

R. L. Parshall held conferences during February with irrigation men in various parts of Colorado, for the purpose of calling attention to the advantages of measuring water to the user. Mr. Parshall believes not more than one-fourth of all the water distributed in the State is measured with reasonable precision; perhaps another fourth is measured with inaccurate devices, and one-half is not measured at all. Some irrigation companies that have been operating for more than 60 years never have attempted to measure the diversion to the users. Last year, because of a short supply, the farmers near the lower ends of canals were entirely without water. Had the supply been more carefully distributed, it is believed these lower users would have received their just share.

O. A. Faris reports, in connection with project Control of Silt in Streams, that on February 2 and 3 he made tests for silt content of the water of the Neches River at Rockland, Texas, while the river was at flood stage. With an "A" frame, hand winch and 50-pound weight he took samples at the surface and 5 depths where the water was 26.0 feet deep and the discharge 13,800 second-feet. The sample taken at 25.3 feet depth contained 0.023 per cent silt by weight; the sample from 20.8 feet contained 0.004 per cent; the other samples contained no silt. The low percentage of silt in this stream is due to sandy soil, forest-covered drainage area, and small area of cultivated land.

Upon request of Dean Taylor of the College of Engineering, University of Texas, Mr. Faris gave a talk before the advanced class in "Storm Water", this class being made up of professors, instructors, and graduate students. His subject was "Silt in Texas Reservoirs, Its Density and Porosity."

R. A. Work reports in connection with wilting point determination work at Medford, Oregon, that due to the difficulty of securing germination of seed in the heavy soil of that area, they are now planting the seed in "flats" until the plants are about 4 inches high with the first pair of true leaves developed. The plants are then transplanted into the dry soil in the cans and the required amount of water added. This method gives a 100 per cent stand in the cans of uniform, healthy plants and the period in the greenhouse is shortened about 4 weeks. Various lots of sunflower seed have been tried, the most promising being the Siberian dwarf secured by M. R. Lewis from the University of Saskatchewan. Varying concentrations of ammonium sulfate are being tried on two lots in an effort to increase the vigor and rate of growth of the plants. Approximately 300 pounds of soil samples were sent to Dr. T.J. Veithmeyer at the University of California laboratory at Davis, for moisture equivalent determination.

L. M. Winsor is preparing a manuscript for a bulletin covering the work done by our Division on the Bear River Migratory Bird Refuge.

H. F. Blaney reports that the soil moisture equipment at Ontario, Calif. was moved to the new laboratory in the basement of the Pomona Post Office Building the latter part of February. When completed, this laboratory will be one of the best equipped of its kind in the West. Laboratory work for our projects in southern California is now concentrated at Pomona. Moisture equivalent and wilting point determinations are also being made for other projects of our Division in the Western States. Colin A. Taylor is in immediate charge of the laboratory.

Mr. Blaney attended a conference called at Los Angeles by Harold Conkling, Deputy State Engineer of California. Work being conducted on the consumptive use of water by vegetation along stream channels was discussed. Representatives of the U. S. Geological Survey were also present. It was decided to continue the work at the Prado and Victorville stations for another year.

A. Lincoln Fellows gave a radio talk on "Irrigation that Does not Pay," prepared by himself, and one on "The Importance of Measuring Irrigation Water" prepared by Mr. Parshall.

Carl Rohwer reports in connection with the project Pumping for Irrigation, that all wells being put down in the Crow Creek Valley at Barnesville, Colo., to determine the effect of diameter of casing on the discharge, have been completed. This installation consists of one 40-inch well and two 30 and 24 inch wells. These wells are 40 feet deep contain 32 feet of water and are bottomed on rock. The logs of these wells show layers of sand, gravel and clay, and as the gravel is rather fine, large yields are not anticipated. The tests on these wells will include discharge and drawdown measurements, and by observations in test holes will determine the radius of influence when pumped at different rates. Test wells in the Arkansas Valley at Boone, Colo., consist of one 24, one 18, and one 12-inch well. Pumping tests on the two larger wells show that for the same drawdown the discharge is considerably greater from the 24-inch well. Tests on the 12-inch well were not made at the time.

R. B. Gray visited the Toledo office March 12 to 14 to confer on corn borer matters. While there he also conferred with C. G. Krieger concerning activities of the A.C.A.E. Fuels and Lubricants Committee, of which Mr. Gray is chairman. From Toledo he went to South Norwalk, Conn., to confer also on matters pertaining to the corn borer project.

Tests on two different types of grasshopper bait distributors, made at Toledo, for combating the grasshopper pest, have shown very promising results. These must deliver poisoned bran at the rate of approximately 10 pounds (dry weight) per acre.

E. M. Mervine reports satisfactory performance of the fertilizer placement drill which was used in a series of plots near Davis, Calif. The placement units were built according to plans worked out by the Bureau engineers. Mr. Mervine left March 15 for Fort Collins where the sugar beet work is to be resumed and where the above machine has been shipped for trial. This arrangement permits of the equivalent of two years work in one.

S. W. McBirney left the Toledo office March 13 for Fort Collins, Colo., to assist E. M. Mervine on the sugar beet project during the spring season.

J. W. Randolph has been conducting draft tests with various types of cotton-growing equipment at Starkville and Stoneville, Miss.

H. C. Mauer of the Toledo office has been transferred to Auburn, Ala., to assist J. W. Randolph in the cotton production machinery project.

W. M. Hurst advises that the first rough draft of the manuscript "Power and Machinery: Their Part in Agriculture" has been completed. This study is similar to Department Bulletin 1348-D, "An Appraisal of Power Used on Farms in the United States" and is to supersede that publication.

G. A. Cumings and W. H. Redit were at Olney, Va., during the week of March 14, making fertilizer applications to potatoes, in connection with the fertilizer placement studies being made in cooperation

with the Bureau of Chemistry and Soils and the Virginia Truck Experiment Station. A potato planter specially equipped for placement experiments was used. With a combination machine which performs all necessary operations simultaneously, considerable differences in draft was noted in obtaining certain fertilizer placements.

A. L. Sharp left for Stoneville, Miss., on March 10 to make alterations on a combined cotton planter and fertilizer distributor which will be used in the fertilizer placement work in the western cotton States. Mr. Sharp will proceed within a few days to College Station, Texas, where he will devise the necessary attachments for a combined cotton planter and fertilizer distributor adaptable to fertilizer placement experiments under Texas conditions. In addition to placing the fertilizer and planting the seed, the machine must simultaneously remove the top soil from the raised seedbed formed in advance of the planting season.

D. A. Isler left Phoenix, Ariz. March 6 for Texas to resume the cultural experiments for control of the pink boll worm in cotton. While in Arizona, where the pest has recently been found, he inaugurated similar investigations.

Thayer Cleaver, stationed at Urbana, spent March 11 and 12 in Toledo conferring on matters pertaining to corn borer control.

R. M. Merrill of Toledo, and Frank Irons of South Norwalk, spent March 22 and 23 at the Washington office, conferring on future plans on the corn borer project.

Wallace Ashby left March 20 for Presque Isle, Maine, where A. D. Edgar is conducting experiments on the storage of white potatoes.

M. A. R. Kelley has completed this season's tests at Brook Hill Farm in Wisconsin on the effects of dairy barn temperatures on milk production, and will return to the Washington office in the near future.

J. T. Bowen has prepared an article on Refrigeration of Milk for a proposed handbook on Refrigeration to be published by the American Society of Refrigeration Engineers. He is now preparing a paper for the Sixth International Congress on Refrigeration which will meet at Buenos Aires in August.

T. A. H. Miller has recently made a trip to Valentine, Nebraska, to confer with representatives of the Biological Survey regarding fencing problems in connection with river crossings.

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